Work Instruction

DIRECTIVE NO.	303-WI-7120.1.1A	**APPROVED BY Signature:**	*Original signed by*
EFFECTIVE DATE:	January 25, 2005	**NAME:**	Esmond Marvray
EXPIRATION DATE:	January 25, 2010	**TITLE:**	Chief, AMO

COMPLIANCE IS MANDATORY

Responsible Office: Code 303 / Assurance Management Office

Title: Software Quality Reporting Process

PREFACE

P.1   PURPOSE

This work instruction is designed to assist the Office of Systems Safety and Mission Assurance (OSSMA) Quality personnel with a means of capturing and reporting metrics on software assessments and assessment findings to the Software Assurance (SA) Lead for the purpose of monitoring, analyzing, and trending software quality (SQ) activities.

P.2   APPLICABILITY

This work instruction applies to all OSSMA Quality personnel in support of software quality assessments.

P.3   REFERENCES

a.   303-PG-7120.2.1, Procedure for Developing and Implementing Software Quality
b.   303-WI-7120.1.2, Software Quality Assessment Process
c.   303_FRM1_RPT, Software Quality Reporting Form
d.   GSFC Software Assurance web site: http://sw-assurance.gsfc.nasa.gov/

P.4   CANCELLATION

303-WI-7120.1.1, Software Quality Reporting Process

P.5   TOOLS, EQUIPMENT, AND MATERIALS

For each process and product assessment, SQ personnel shall require a copy of the SQ reporting form (available on the GSFC Software Assurance web site).

P.6   SAFETY PRECAUTIONS AND WARNINGS

N/A

P.7   TRAINING

N/A

P.8   RECORDS

[Describe all records, including forms recommended or required to carry out the requirements of the WI. In addition, identify in a Records Table, all records resulting from the WI, the record custodian(s), the record retention schedule, and associated retention period reflected in NPR 1441.1.]

Record Title	Record Custodian	Retention
SQ Reporting Form (completed)	Code 303, Software Assurance Lead	*NRRS 8/36.5C1- Handle as permanent pending retention approval.

NRRS – NASA Records Retention Schedule (NPR 1441.1)

P.9   METRICS

The Software Assurance (SA) Lead shall monitor, analyze, and control the process and product software quality assurance activities in OSSMA based on metrics gathered across GSFC projects. Potential process improvement or corrective action may be applied in areas such as resources assigned to projects, process and/or product assessments planned, and/or training provided to SQ personnel.

Software Quality Program Metrics that will be generated by the SA Lead include:

1. Level of SQ personnel support across GSFC projects
2. Number of Projects with approved Software Assurance Plans

SQ personnel are responsible for generating project level metrics:

a. Number of SQ Assessments (Planned vs. Actual)
b. Number of SQ Assessment Findings
c. Number of SQ Assessment Findings by Priority Level
d. Number of SQ Observations
e. Number of SQ Findings open > 60 days (Aging Report)
f. Number of Risks identified as a result of the SQ assessment

P.10   DEFINITIONS

a. Finding – Non-compliance to a requirement, procedure, standard, or specification.

b. Observation - A statement of fact (positive or negative) based on objective evidence.

c. Priority 1 Finding - A major omission or non-compliance that requires immediate attention and corrective and preventive action, as well as SQ follow-up. Failure to correct may impact the development life cycle or the integrity of the product.

d. Priority 2 Finding - A minor omission or non-compliance that does not jeopardize the immediate quality of the process or product, but requires timely corrective and preventive action. SQ follow-up is also required.

e. Process Assessment – A systematic examination to determine whether a software process is being performed in accordance with documented plans, procedures, etc.

f. Product Assessment – A systematic examination to determine whether a software product meets specified requirements and standards.

INSTRUCTIONS

1. SQ personnel shall use the software quality reporting form for process, product, and combined assessments, where combined assessments include both process and product. Additional information on what qualifies as a product, process, or combined assessment can be obtained from 303-PG-7120.2.1, Procedure for Developing and Implementing Software Quality, located on the Goddard Directives Management System (GDMS).

2. SQ personnel shall complete an SQ reporting form within 5 business days of the completed assessment and send it electronically to the Software Assurance Lead. Reference Figure 1 for a sample reporting form and Table 1 for the complete field descriptions for software quality reporting. All fields on the form are required with the exception of the "Comments to SA Lead" field.

3. The SA Lead shall generate and maintain SQ program metrics on a quarterly basis based on input from the SQ reporting forms. These metrics are used to assess the maturity of GSFC's software quality program and to identify potential areas of process improvement. Metrics are shared with OSSMA management at software assurance status meetings.

4. SQ personnel shall generate and maintain project level SQ metrics on a quarterly basis. These metrics provide SQ personnel with insight into the maturity and quality of the project level processes and products. Metrics are shared with the project's Systems Assurance Manager.

Figure 1, Sample SQ Reporting Form - 303_FRM1_RPT

Software Quality Reporting Form

Date Rec'd:
Tracking Number:
(Issued by SA Lead)

Assessor: (Name, phone, and e-mail)	**Date: (MMMM DD, YYYY)**
Project Name:	**Project Life Cycle Phase: (check one)**
SO Number:	☐ **Concept**
Assessment Completion Date:	☐ **Requirements**
Assessment Type: (check one) ☐ **Process or** ☐ **Product or** ☐ **Combined**	☐ Design
Assessment Trigger:	☐ **Implementation**
Assessment Task:	☐ **Integration Test (Verification)**
Name & Version of Checklist Used:	☐ **Acceptance Test (Validation)**
Number of Findings:	☐ **Operations and Maintenance**
Number of Findings by Priority: P1# , P2#	☐ **Other_____**
Number of Observations:	
Risk Identified: (check one) ☐ **Yes # (# of Risk), or** ☐ **No**	
Approved Software Assurance Plan (check) ☐ **Yes or** ☐ **No or (if no,** ☐ **Draft developed or under review)**	
Comments to SA Lead:	

Finding – Non-compliance to a requirement, procedure, standard, or specification.

> **Priority 1 Finding** - A major omission or non-compliance that requires immediate attention and corrective and preventive action, as well as SQ follow-up. Failure to correct may impact the development life cycle or the integrity of the product. *Example: Software requirements not under configuration control.*

> **Priority 2 Finding** - A minor omission or non-compliance that does not jeopardize the immediate quality of the process or product, but requires timely corrective and preventive action. SQ follow-up is also required. *Example: Software media is mislabeled in Software Library.*

Observation - A statement of fact (positive or negative) based on objective evidence.

Table 1, SQ Reporting Form Field Descriptions
(for Figure 1, Sample SQ Reporting Form – 303_FRM1_RPT)

Field Name	Description
Date Rec'd	Leave blank. Internal field for Software Assurance Lead to fill in; used for documenting date received by SA Lead
Tracking Number	Leave blank. Internal field for Software Assurance Lead to fill in; used for tracking SQ Reporting forms
Assessor	Enter your contact information: Full Name, Phone, and E-mail address
Date	Enter the date this form was completed (MMMM DD, YYYY)
Project Name	Enter the project name, mission name, system name, or system. Examples: Aura EMOS, STEREO IMPACT flight software
Project Life Cycle Phase	Check off one life cycle phase in which the assessment was conducted
SO Number	OSSMA MASC service order number, example: 1.060
Assessment Completion Date	Enter the date the assessment was completed MMMM DD, YYYY
Assessment Type	Check the type of assessment: process, product, or combined (where combined includes both process and product)
Assessment Trigger	Identify reason for assessment (e.g., SQ planned activity, project schedule, development performance issue)
Assessment Task	Enter name of the process, product, or combined assessment. Example: CM Plan, Risk Management Process, Engineering Peer Review, etc...*(reference 303-PG-7120.2.1, Procedure for Developing and Implementing Software Quality for complete list)*
Name & Version of Checklist used	Enter the name/title and version number of the checklist used for the assessment. If no checklist was used, enter explanation in the "Comments to SA Lead" field
Number of Findings	Enter the total number of findings found during the assessment
Number of Findings by Priority	Enter the number of findings by priority: **P1** = A major omission or non-compliance that requires immediate attention and corrective and preventive action, where failure to correct may impact the development life cycle or the integrity of the product. **P2** = A minor omission or non-compliance that does not jeopardize the immediate quality of the process or product, but requires timely corrective and preventive action
Number of Observations	Enter the total number of observations found during the assessment
Risk Identified	Check "Yes" if risks were identified and enter the number of risks. ***NOTE: All risks identified are to be reported to the project risk manager.*** Check "No" if none where identified
Approved Software Assurance Plan	Check one: Yes if plan has been approved, or No if plan has not been approved, or draft plan is under review
Comments to SA Lead	Enter any comments to the SA Lead regarding any assessment concerns or checklist suggestions

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CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline		Initial Release
A	01/25/2005	Updated to new template; removed non-requirements; rephrase to improve clarity